

Claims

1 - 37 (cancelled)

38. (Original) An imaging system for acquiring an omnidirectional mosaic image comprising : an image slice camera having a large field of view in a first direction and a small imaging width in a second direction, the image slice camera receiving rays of light incident on the camera within the large field of view, at least a portion of said incident rays being substantially parallel to each other with respect to said second direction, said portion of rays being directed to an area of an imaging sensor to form image slice data; a rotational drive system operatively coupled to the image slice camera, the rotational drive system rotating the image slice camera along an axis of rotation substantially parallel to the first direction; a control unit operatively coupled to the rotational drive system and image slice camera, the control unit receiving the image slice data from the image slice camera and recording corresponding rotational positional information of the rotational drive system, the control unit acquiring a plurality of image slices at known rotational positions and concatenating said image slices to form an omnidirectional mosaic image data.

39. (Original) The imaging system of claim 38, further comprising an output device coupled to the control unit for displaying an omnidirectional mosaic image from the omnidirectional mosaic image data.

40. (Original) The imaging system of claim 38, wherein the slice camera comprises: an imaging lens having an entrance pupil; a non-convex mirror section receiving the parallel rays and directing said portion of rays onto the entrance pupil of the imaging lens; an imaging sensor, the imaging sensor being responsive to the rays which are incident on the entrance pupil of the imaging lens.

41. (Original) The imaging system of claim 38, wherein the slice camera comprises: an imaging sensor; a telecentric lens arrangement; and a conical mirror section, the conical mirror section receiving said incident rays and directing said portion of rays onto the telecentric lens arrangement whereby only said portion of rays are directed to the imaging sensor.

42. (Original) The imaging system of claim 38, wherein the slice camera comprises: a first mirror section receiving said incident rays; a second mirror section; and an imaging sensor, the second mirror being positioned to receive said portion of rays from the first mirror and direct said portion of rays to the imaging sensor.

43. (Original) The imaging system of claim 42, wherein the second mirror section has a near focus and a far focus and wherein the first mirror section projects said portion of rays through the near focus and the second mirror section directs said portion of rays to the image sensor located at a position proximate the far focus.

44. (Original) The imaging system of claim 43 wherein the near focus is located in front of the first mirror section and the far focus is located behind the first mirror section.

45. (Original) The imaging system of claim 38, wherein the slice camera comprises: an imaging sensor; a telecentric lens arrangement; and a plurality of stacked parabolic mirror sections receiving the incident rays and directing said portion of rays to the telecentric lens arrangement such that only said portion of rays are incident on the imaging sensor.

46. (Original) The imaging system of claim 38, wherein the slice camera has a center of projection and wherein the axis of rotation is radially offset from the center of projection.

47. (Original) The imaging system of claim 38, wherein the control unit generates left and right omnidirectional mosaic data from the image slices acquired in a single rotation about the axis of rotation.

48. (Original) The imaging system of claim 47, wherein said control unit provides the left and right omnidirectional mosaic data to the output device to form a stereoscopic image.

49. (Original) The imaging system of claim 48, wherein the output device includes left and right display portions for displaying the left and right omnidirectional mosaic data, respectively.

50. (Original) The imaging system of claim 49, wherein the output device is a head mounted display.

51. (Original) The imaging system of claim 46, wherein control unit calculates the depth of a plurality of points in the image from the left and right omnidirectional mosaic data.